We claim:

1. A variable-gain amplifier that provides a mixer output signal in response to first and second input signals, comprising:

an attenuator configured to receive said first input signal and have a plurality of taps that provide successively-attenuated tap signals;

a plurality of transconductance cells that are each coupled to receive a respective one of said tap signals; and

a multiplexer that, in response to at least a first segment of a control word, routes a control current to enable at least a selected one of said transconductance cells and provide therefrom a current signal whose amplitude corresponds to the tap signal of said selected transconductance cell.

2. The amplifier of claim 1, further including a gain interpolator that, in response to a second segment of said control word, provides said control current to said multiplexer.

3. The amplifier of claim 1, further including a gain interpolator that, in response to a second segment of said control word, divides said control current into first and second divided control currents and wherein said multiplexer, in response to said first control word segment, routes said first and second divided control currents to enable and adjust the gain of a selected pair of said transconductance cells and provide from said selected pair, first and second portions of said current signal.

4. The amplifier of claim 3, wherein said gain interpolator comprises a digital-to-analog converter.

5. The amplifier of claim 3, wherein said gain interpolator comprises:

a digital gain mapper that maps said second control word segment to a shaped control word that corresponds to a

predetermined gain interpolation; and

a digital-to-analog converter that provides said first and second divided control currents in response to said shaped control word.

6. The amplifier of claim 1, wherein said attenuator is a plurality of impedance elements arranged to form a ladder which defines said taps.

7. The amplifier of claim 1, wherein each of said transconductance cells includes a differential pair of transistors.

8. The amplifier of claim 7, further including at least one current source is coupled to said differential pair to enhance head room.

9. The amplifier of claim 1, wherein each of said transconductance cells comprise a multi-tanh arrangement of a plurality of differential pairs of transistors.

10. The amplifier of claim 1, further including a current mirror that routes said control current to said selected transconductance cell.

11. The amplifier of claim 1, further including:

a plurality of cascode transistors that are inserted to each couple a respective one of said transconductance cells to said transistor switch;

a plurality of resistors each coupled between a respective adjacent pair of said cascode transistors; and

a current source coupled to drive a bias current through said resistors to thereby vary a bias signal of said transconductance cells.

12. A variable-gain mixer that provides a mixer output signal in response to first and second input signals, comprising:

an attenuator configured to receive said first input signal and have a plurality of taps that provide successively-attenuated

tap signals;

a plurality of transconductance cells that are each coupled to receive a respective one of said tap signals;

a multiplexer that, in response to at least a first segment of a control word, routes a control current to enable at least a selected one of said transconductance cells and provide therefrom a current signal that corresponds to a respective one of said tap signals; and

a transistor switch arranged to multiply said current signal and said second input signal to thereby provide a mixer output signal whose amplitude corresponds to the amplitude of the selected cell's tap signal.

13. The mixer of claim 12, further including a gain interpolator that, in response to a second segment of said control word, provides said control current to said multiplexer.

14. The mixer of claim 12, further including a gain interpolator that, in response to a second segment of said control word, divides said control current into first and second divided control currents and wherein said multiplexer, in response to said first control word segment, routes said first and second divided control currents to enable and adjust the gain of a selected pair of said transconductance cells and provide from said selected pair, first and second portions of said current signal.

15. The mixer of claim 14, wherein said gain interpolator comprises a digital-to-analog converter.

16. The mixer of claim 14, wherein said gain interpolator comprises:

a digital gain mapper that maps said second control word segment to a shaped control word that corresponds to a predetermined gain interpolation; and

a digital-to-analog converter that provides said first and second

divided control currents in response to said shaped control word.

17. The mixer of claim 12, wherein said attenuator is a plurality of impedance elements arranged to form a ladder which defines said taps.

18. The mixer of claim 12, wherein each of said transconductance cells includes a differential pair of transistors.

19. The mixer of claim 18, further including at least one current source is coupled to said differential pair to enhance head room.

20. The mixer of claim 12, wherein each of said transconductance cells comprise a multi-tanh arrangement of a plurality of differential pairs of transistors.

21. The mixer of claim 12, wherein said transistor switch comprises cross-coupled first and second differential pairs of transistors.

22. The mixer of claim 12, further including a current mirror that routes said control current to said selected transconductance cell.

23. The mixer of claim 12, further including at least one cascode transistor inserted to couple the current signal of said selected transconductance cell to said transistor switch.

24. The mixer of claim 12, further including:

a plurality of cascode transistors that are inserted to each couple a respective one of said transconductance cells to said transistor switch;

a plurality of resistors each coupled between a respective adjacent pair of said cascode transistors; and

a current source coupled to drive a bias current through said

resistors to thereby vary a bias signal of said transconductance cells.

25. A frequency converter whose gain corresponds to a control word, comprising:

an oscillator that provides an oscillator signal;

a variable-gain mixer that includes:

a) an attenuator configured to receive an input signal and to have a plurality of taps that provide successively-attenuated tap signals;

b) a plurality of transconductance cells that are each coupled to receive a respective one of said tap signals;

c) a multiplexer that receives a first segment of said control word;

d) a gain interpolator that provides first and second control currents with amplitudes that correspond to a second segment of said control word wherein, in response to said first control word segment, said multiplexer routes said first and second control currents to enable and adjust the gain of a selected adjacent pair of said transconductance cells and provide therefrom first and second current signals in response to the selected pair's respective tap signal; and

e) a transistor switch arranged to multiply said first and second current signals with said local oscillator signal to thereby provide a mixer output signal with a gain that corresponds to said control word; and

a filter configured to pass a selected frequency region of said mixer output signal.

26. The converter of claim 25, wherein said gain interpolator comprises:

a digital gain mapper that maps said second control word

segment to a shaped control word that corresponds to a predetermined gain interpolation; and

a digital-to-analog converter that provides first and second control currents that correspond to said shaped control word.

27. The converter of claim 25, further including:

a plurality of cascode transistors that are inserted to each couple a respective one of said transconductance cells to said transistor switch;

a plurality of resistors each coupled between a respective adjacent pair of said cascode transistors; and

a current source coupled to drive a bias current through said resistors to thereby vary a bias signal of said transconductance cells.

28. The converter of claim 25, further including an analog-to-digital converter that converts the selected frequency region of said mixer output signal to a corresponding digital signal.